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1918

FARMERS' SHORT COURSES

September 30 to November 8, 1918

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UNIVERSITY FARM
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ORGANIZATION OF THE UNIVERSITY

The University of California is an integral part of the public educational system of the State. As such it completes the work begun in the public schools. Through aid from the State and the United States, and by private gifts, it furnishes instruction in literature and in science, and in the professions of engineering, art, law, medicine, dentistry, and pharmacy. In the Colleges of Letters and Science, Commerce, Agriculture, and Engineering these privileges are offered without charge for tuition, to all residents of California who are qualified for admission. Non-residents of California are charged a tuition fee of ten dollars each half-year. In the professional colleges, except that of Law, tuition fees are charged. The instruction in all the colleges is open to all qualified persons, without distinction of sex. The Constitution of the State provides for the perpetuation of the University, with all its departments.

Letters of inquiry concerning the College of Agriculture should be addressed to the *Dean of the College of Agriculture, Berkeley, California.*

For the following circulars of information concerning the several colleges and departments of the University apply to the *Recorder of the Faculties, University of California, Berkeley, California.*

1. The Circular of Information, Academic Departments (College of Letters and Science and Engineering, and the first two years of Medicine). Containing general information about the University, its organization, government, faculties, requirements for admission both to graduate and undergraduate status, requirements for degrees and teachers' recommendations, expenses.
2. The Annual Announcement of Courses of Instruction in the Academic Colleges. Published annually in July. Price 10 cents. Sent by mail by the Recorder of the Faculties for 15 cents.
3. The Announcement of the Summer Session in the Academic Colleges, published annually in March. Sent free.

THE FARMERS' SHORT COURSES

SEPTEMBER 30 TO NOVEMBER 8, 1918

The purpose of the Short Courses in Agriculture is to enable persons, especially those of mature years and ranch experience, to acquire a knowledge of the fundamental principles of agriculture and of the results of the latest investigations in the production of fruit, field and forage crops, and live stock of the various classes.

The University Farm, which was purchased in accordance with a California statute of 1905, comprises 779 acres of fine alluvial soil. It is situated at Davis, Yolo County, a station on the main line of the Southern Pacific Railroad, thirteen miles west of Sacramento and seventy-six miles from San Francisco. During the past year, the Armstrong ranch of 300 acres, adjoining the University Farm, has been rented by the University for a period of years, thus largely increasing the facilities for experimental work in dry farming, horticulture and animal husbandry. A large variety of products are grown on the University Farm, both by irrigation and by dry farming. The facilities for investigations on the duty of water are probably unequaled anywhere, and a most complete collection of devices for measuring water are installed so that their actual operation may be seen and understood.

BUILDINGS AND EQUIPMENT

The farm is provided with numerous buildings for instruction in the various phases of agriculture and horticulture. These include a large auditorium building, a commercial creamery, stock pavilion, animal husbandry, horticulture, and veterinary science buildings, mechanical shops, three dormitories, a large dining hall, and buildings for horses, dairy and beef cattle,

sheep, swine, and poultry. One concrete silo and seven wooden silos furnish succulent feed throughout the year for the live stock.

Cattle: There are over 120 head of dairy cattle, the following breeds being represented: Holstein-Friesian, Jersey, Guernsey, and Ayrshire, and about 50 head of beef cattle, belonging to the Hereford, Shorthorn, and Aberdeen Angus breeds.

Sheep: The following breeds of sheep are kept: Shropshire, Hampshire, Southdown, Cotswold, Rambouillet, and Romney Marsh. In the aggregate there are about 175 head of sheep in the breeding flock, besides a flock of 100 grade ewes kept for experimental purposes. Representatives of Toggenburg and Anglo-Nubian milch goats and of Angoras are also kept.

Hogs: Hog raising is highly developed. The total number of hogs handled each year is about 400, representing the Poland-China, Berkshire, Duroc-Jersey, Tamworth, Chester White, Hampshire, and Large Yorkshire breeds. The breeding herd consists of about fifty brood sows.

Horses: There are representatives of both light and heavy horses in the horse barn, 12 light harness and saddle horses and 15 pure-bred Percherons and grade or pure-bred Shires.

Orchards: There are 35 acres of vineyards and about 550 varieties of grapes; 60 acres of almond, peach, prune, apricot, apple, pear, cherry, walnut, and olive orchards. Budding, grafting, pruning, and spraying are all taught by actual practice. Sixty acres are devoted to experiments with field and forage crops.

Creamery: Thorough instruction in butter, cheese, and ice-cream making is offered in connection with the commercial creamery course. The University Farm Creamery is operated throughout the year in order to give creamery practice work in the Dairy-Manufacture Courses. The sales of dairy products amount to about \$50,000 a year. Cream and milk from the surrounding country or produced on the University Farm are purchased for manufacturing butter, cheese, and ice cream. A market milk route is also maintained.

Library: The University Farm library contains about 2700 volumes. Sets of the publications of the Agricultural Experiment Stations and of the United States Department of Agriculture are kept on file, as well as about two hundred American and foreign periodicals, including the main agricultural papers and scientific journals of the day.

The reading room and library are open to students from 7:45 a.m. to 12 m. and from 1 to 6 p.m. daily; also evenings from 6:45 to 9, except on Sunday, when it is open from 2 to 5 p.m.

NUMBER OF COURSES OFFERED

Four Short Courses, each lasting six weeks, are offered during the fall of 1918, from September 30 to November 8, 1918, as follows:

General Agriculture (including Animal Husbandry).

Horticulture.

Poultry Husbandry.

Dairy Manufactures.

These courses will be followed by two-week courses in:

Market Milk Production, November 11-22.

Buttermaking, November 11-21.

Cheesemaking, December 2-13.

Milking Machines, December 2-13.

Beekeeping, December 2-7.

Gas Tractors, November 11-19.

Gas Tractors (experienced men only), November 20-22.

The two-weeks courses are intended for people who have had at least six months' practical experience in the various branches of agriculture or dairying, and only those who have had such experience will be admitted to these courses. The number of students in the Creamerymen's Course will be limited to twenty; in the course in Cheese-making the number will be limited to sixteen; in the Milking-Machine course to twenty-four; and in the course in Poultry Husbandry to forty.

ADMISSION

There are no entrance examinations to the Farmers' Short Courses and no restrictions as to sex, but applicants must be at least 18 years of age. Previous practical experience is required for students in the two-weeks' courses, as stated above.

EXPENSES

Fees and Deposits.—In the six-weeks courses a registration fee of \$2 is charged each student. A deposit of \$3 for breakage is also charged, but the portion not needed to pay for breakage will be returned. The full fee and deposit for each course are to be paid whether the participant is present during the whole or only a part of the course. In the two-weeks' courses a registration fee of \$1 is charged, and also a deposit of \$3 for breakage in the courses of Market Milk Production, Butter and Cheese Making, and Milking Machines. No additional registration fee will be required for students who have taken one of the six-weeks' courses the same fall.

Rooms.—Most of the rooms in the school dormitories are rented to students who occupy them eight months of the year. Short-Course students will be accommodated so far as rooms are available, in the order of application, accompanied by the Short-Course registration fee of \$2. Rooms will not be assigned before September 27, nor held after 5 p.m. October 1.

In the town of Davis, many rooms are for rent in private homes, within five to fifteen minutes' walk of the University Farm. A member of the staff of the school will assist students in securing accommodations.

Board.—Board may be secured in the University Farm Cafeteria at an expenditure that need not exceed \$5 per week.

Books and Special Clothing.—Dairy students are required to wear white suits while at work in the creamery. These may be brought from home or purchased in Davis at \$3.00 per suit. Other students will find it desirable to have overalls for working in the stock barns or around machinery. Books and other neces-

sary supplies may be purchased in the Associated Students' Store at the University Farm.

The total expenses incident to attending the Farmers' Short Courses will not ordinarily exceed \$60, exclusive of railroad fare, for the six weeks' courses, and \$20 for the two weeks' courses.

A circular giving the detailed program of the lectures, demonstrations, and practice work offered in the various farmers' short courses will be sent upon request. If interested in receiving this circular, fill out and forward the application blank found on page 15.

THE SHORT COURSE IN AGRICULTURE

SEPTEMBER 30 TO NOVEMBER 8, 1918

The Short Course in Agriculture is planned to meet the needs of farmers more especially interested in general agriculture or stock raising. Any man who is a grain farmer, a stock raiser, or a dairy farmer, or who intends to engage in any of these activities, should be greatly benefited by this course. If it enables him to save just one horse, or increase his dairy production 5 per cent, or the yield of barley only a sack per acre, he will be amply repaid for the time and expense of the course. This course is separated into two divisions of three weeks each, Crop Production and Animal Husbandry. The schedule has been arranged in such a manner that students who cannot attend the full six weeks' course may take such portions thereof as are of special value and interest to them. Some of the special subjects taught are outlined below.

Soils and Fertilizers.—Instruction in these subjects is given by means of lectures, laboratory work and field demonstrations. The knowledge thus gained will enable farmers to understand the different types of California soils and to crop them so as to maintain permanent fertility of the land.

Farm Management.—A portion of the time will be taken up with discussions of a farm carried through the process of choos-

ing, getting capital, general plan of work, layout of fields, equipment, character of crops, probable yields, selling product, accounting, cost data, leasing and selling, law questions, hiring men, and kindred subjects.

Field and Forage Crops.—The work in field and forage crops will consist primarily of lectures covering the funda-



All kinds of livestock are kept at the University Farm.

mental principles of dry farming, the successful growing of grain, forage and cover crops, with special reference to their adaptation and culture in California. Seven practice periods will be given over to the study of crops, especially the factors relating to the types and qualities and judging of cereals.

Irrigation.—This work consists of lectures and field demonstrations showing the necessity and methods of measuring water; the preparation of land and methods of irrigating alfalfa, orchards, field crops, etc. Special attention is given to the water requirements of different crops, proper time of irrigation, costs and returns, methods and cost of construction of farm laterals, head gates, concrete pipe lines, etc.; the use of flumes, pipe lines, etc., in the delivery of water; design and construction of pumping plants and reservoirs, and their use in irrigation practice.

The above work will be illustrated by two all-day field demonstrations dealing with practical irrigation problems.

Animal Husbandry.—The work offered in animal husbandry includes lectures and demonstrations dealing with the breeding, feeding, care, management and judging of the various pure breeds and market classes of farm animals.

Dairying.—Students are taught the Babcock test for fat in milk and other dairy products and are given thorough practice in its use. Farm separators and the care of milk and cream on the farm are other topics taught in this course.

Veterinary Science.—The care and treatment of sick animals; treatment for common diseases and ailments; minor operations. Special attention is given to hog cholera and tuberculosis; practice work bearing directly on the course is given.

Agricultural Engineering.—A study of the farm implements and machinery applicable to California agriculture; practice in rope work, power and pumping machinery; gas engines and electric motors; factors concerned in the construction of farm buildings, and the equipment of the farm shop.

In addition to the subjects above mentioned, lectures and practice in Horticulture, and many special lectures are given. The complete daily programme of studies is published in a separate circular (see application blank on page 15). It is only by a careful study of this schedule that the prospective student can fully appreciate the opportunities that are presented for increasing his knowledge and earning power through the instruction offered in these courses.

THE SHORT COURSE IN HORTICULTURE

SEPTEMBER 30 TO NOVEMBER 8, 1918

Two distinct courses will be offered in Horticulture; one, the regular six weeks' course, running from September 30 to November 8, designed to meet the needs of fruit growers of some experience, and a course for beginners starting September 28, and running for three weeks, which it is thought will meet better the needs of students with no experience in fruit growing and who have not even lived on a ranch.

The instruction given during the first three weeks is intended to lay the foundation for the remainder of the course. Every fruit grower should have full information regarding soils, irrigation, farm business methods, farm machinery and farm crops. The last three weeks of the course will be devoted to lectures and field exercises in budding, grafting, planting, spraying and pruning of apples, apricots, almonds, cherries, peaches, pears, prunes, plums, walnuts, grapes and olives. From one to four or five days will be devoted to each topic. Busy people may come for one topic only, as spraying or pruning.

The special feature of the course will be the complete manner in which the subject of pruning is considered. There is a good collection of trees on the Farm available for demonstration purposes.

There will be lectures and exercises in vegetable gardening and a day will be devoted to a study of the olive. Five days will be occupied in lectures and field demonstrations with grapes.

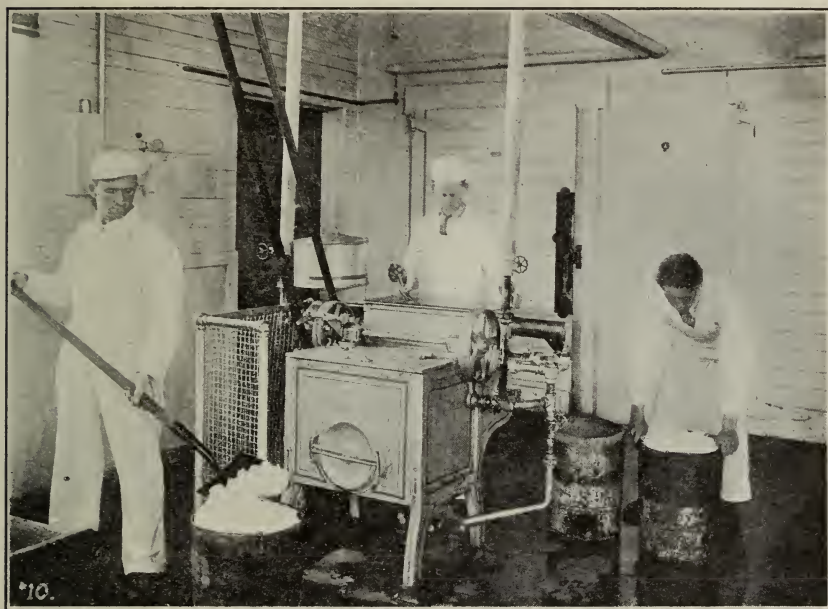
THE SHORT COURSES IN DAIRY MANUFACTURES

SEPTEMBER 30 TO NOVEMBER 8, 1918

The Dairy Manufactures Short Courses are designed to meet the needs of those actively engaged in the manufacture of dairy products. The more practical phases of butter, cheese, and ice-cream making are taken up as completely as the time allows. The courses include lectures upon the secretion, composition, and handling of milk, the operation of the Babcock test and other commercial tests, dairy bacteriology, lectures and practice in separation, pasteurization, and ripening of cream, production and use of starters, churning and moisture control in butter, manufacture of California and Cheddar types of cheese, separation of whey, scoring dairy products, ice-cream making, creamery accounting, creamery management, and dairy mechanics. The first two weeks of the six-weeks course will be devoted exclusively to milk and cream testing for men and women who desire to prepare themselves for positions that will be available

on account of the war. The last four weeks of the course will be devoted to butter and cheese making.

While much of the work in butter and cheese making will be given in common, there will be two separate courses, one of which will take up butter making and related subjects, and the



Practice work is emphasized in all creamery courses.

other cheese making. A part of these courses will consist of lectures on such subjects as Dairy Cattle, Hogs, and Alfalfa, which are of interest and importance to producers as well as manufacturers. The two-weeks' courses which will follow the six-weeks' course will be open to experienced men only. The purpose of these courses is to afford the busy butter maker and cheese maker, who cannot get away from his factory for a longer period, an opportunity to "brush up" and to discuss vital problems.

Many of the creamery operators of the United States have taken a course in Dairy Manufactures at some dairy school. Under present conditions no man can expect to become competent to operate a creamery without taking such a course or serving an apprenticeship under a man who has the technical information offered in a course in Dairy Manufactures. The supply of competent men to operate creameries and cheese factories is not equal to the demand.

Creamery Practice Course.—Beginning January 1 and May 1 of each year and covering a period of four months, opportunity will be given for a limited number of students to take four months' practice work in butter and ice-cream making, cheese making or market milk. Four months' practice in the butter or cheese department will admit students to the two weeks' short course for Creamerymen and Cheese Makers. Arrangements for entering this course may be made by correspondence.

THE SHORT COURSE IN POULTRY HUSBANDRY

SEPTEMBER 30 TO NOVEMBER 8, 1918

The object of the course in Poultry Husbandry is to give the student a comprehensive and detailed grasp of the fundamental principles of the subject and their practical application to the business side of poultry farming, in order that he may be better fitted to handle successfully the practical, economic problems that are continually arising in the development and management of a commercial poultry plant. It is not sufficient that a poultryman know how to hatch, rear, feed, breed, and care for fowls. He must also know how to handle tools and skillfully perform such carpentry work as building hen houses, making coops; how to grow green crops for his fowls; how to irrigate the crops; how to plow and otherwise manipulate different soils for best results; how to operate and care for such farm machinery as gasoline engines, bone cutters, feed mills, alfalfa cutters, field tools, etc.; and finally, it is important for a poultryman to know how to keep a clear, concise set of accounts, to know the exact cost of

operation in every phase of the work and maintain his business on a firm financial basis.

Poultry Management.—This course will treat in detail with the selection and laying out of a poultry ranch; the natural and artificial incubation and brooding of chicks; the selection of fowls for constitutional vigor; the laws of breeding and their



Flock of chickens on the Farm

application to the building up of flocks of heavy layers or choice table fowls; poultry house construction; the making of poultry equipment, such as trap nests, feed hoppers, fattening crates, etc.; the principles of poultry feeding and the best methods of feeding baby chicks, growing stock, laying hens, fowls to be fattened for market, etc.; selecting and grading market eggs; packing and marketing poultry products to the best advantage; mating and handling the breeders; poultry parasites; diseases and sanitation; the general care and management of a poultry ranch.

Incubation and Brooding.—A practice course in operating incubators; keeping records; hatching eggs; brooding, feeding, and caring for young chicks, designed to give students actual practice in artificial hatching and rearing of chicks. Each student will be given an incubator to overhaul and operate for one

week of practice before being given any eggs. The incubator will then be set with eggs. When the chicks hatch, each student will place his chicks in a separate pen in the brooder house and care for them till the end of the course. Open only to students taking all the poultry work.



Field trips and practice work are an important phase of the course in horticulture.

THE TWO-WEEK SHORT COURSES

A. THE COURSE IN MARKET MILK PRODUCTION

NOVEMBER 11 TO 22, 1918

The main principles underlying the business of milk production will be discussed in this course in lectures and by demonstrations. Practice work will be given in judging and feeding dairy cows, diseases of dairy cattle, testing milk and cream, care of milk and cream on the farm, sanitary production of market milk, separation and clarification of milk, pasteurization of milk and cream, dairy refrigeration, marketing of milk, state dairy laws and related topics.

This course is intended primarily for experienced dairymen, and only persons who have had at least several months of practical dairy experience will be admitted.

B. BUTTERMAKERS' COURSE

NOVEMBER 11 TO 21, 1918

Applicants must have had at least six months of creamery experience or the four-months' University Farm Creamery Practice Course, or the six-weeks Dairy Manufactures' Short Course previous to 1918. The number allowed to register in this course will be limited to twenty.

The first week in this course will be devoted exclusively to the problems in buttermaking, with instruction in creamery overrun, systems of payment for butterfat, scoring butter, keeping quality and marketing of butter, grading cream, starters, pasteurization, creamery practice, cost accounting and business methods.

The second week will be devoted to instruction and practice in ice-cream making and the testing of dairy products.

Creamerymen and buttermakers may register either for one or two weeks' work in this course. Ice-cream makers and testers may register for the second week only.

C. CHEESEMAKERS' COURSE

DECEMBER 2 TO 13, 1918

Lectures and practice will be given in the manufacture and care of Cheddar, California Granular, Jack and other common types of cheese.

D. MACHINE MILKERS' COURSE

DECEMBER 2 TO 13, 1918

This course will be given if twelve or more students are registered prior to November 25. Write for further information to *Dean of University Farm School, Davis, California.*

E. THE GAS TRACTOR SHORT COURSE

NOVEMBER 11 TO 19, 1918

This course is similar to the Tractor Short Courses held at Davis in 1916 and 1917 and at Riverside in February, 1918, at which time the applications received exceeded the number that

could be accommodated. Registration is limited to 180. The enrollment is made in the order of registration. A fee of \$1 is charged.

The Gas Tractor Short Course will consist of lectures on the principles and practice of the gas tractor and practice work in adjusting, repairing, care, and operation.

At least ten of the best makes of tractors will be available for instruction, each of which will be in charge of an experienced service man.

For detailed information write *Dean of University Farm School, Davis, California.*

(A similar course will be held at Riverside in February, 1919. For detailed information address Director of Citrus Experiment Station, Riverside, California.)

F. TRACTOR OWNERS' AND OPERATORS' CONFERENCE

NOVEMBER 20 TO 22, 1918

A three-day conference for experienced gas tractor owners and operators who want to get in touch with the development of the practice of tractor operation and management. The University has arranged for co-operation with the service departments of several of the leading manufacturers. Demonstrations of repair jobs will be an important feature of the conference.

For detailed information write *Dean of University Farm School, Davis, California.*

G. BEEKEEPERS' COURSE

DECEMBER 2 TO 7, 1918

A course of practical instruction in modern methods of beekeeping, intended primarily for beekeepers, and prospective beekeepers.*

For detailed information write the *Dean of University Farm School, Davis, California.*

* This course will also be given at Visalia December 9 to 14, and at Riverside December 16 to 21.

UNIVERSITY OF CALIFORNIA—COLLEGE OF AGRICULTURE
UNIVERSITY FARM, DAVIS, CALIFORNIA

FARMERS' SHORT COURSES, 1918

APPLICATION FORM

I may attend the Short Course in.....
and would like to receive the detailed programme of lectures and demon-
strations in the Farmers' Short Courses.

My occupation is

.....

My experience in farming, dairy, creamery, stock raising, fruit growing,
grape growing, and poultry has been.....

.....

.....

.....

(Signed)

Home Address

.....

Age

It will be helpful to us to know approximately the expected attend-
ance upon the courses before their time of beginning, and applicants are
therefore requested to inform the undersigned of their intention to attend
the short course as soon as they have decided to do so.

Dean, University Farm School,
Davis, California.

SCHEDULE OF SHORT COURSE IN AGRICULTURE

SEPTEMBER 30 TO NOVEMBER 8, 1918

A. CROP PRODUCTION

First Week

Monday, September 30:

8-12 } Registration
1-5 }

7:30 Opening session. Music. Addresses: Benj. Ide Wheeler, President of University of California; Thomas Forsyth Hunt, Dean of College of Agriculture; H. E. Van Norman, Dean of University Farm School, presiding.

Tuesday, October 1:

7:40- 8:25	Lecture: Origin and Formation of Soils.	C. F. Shaw
8:35-11:10	Practice: Soils.	Alfred Smith
11:20-12:05	Lecture: The Business Aspects of Farming.	R. L. Adams
1-2	Lecture: Principles of Crop Production in California.	B. A. Madson
2-4	Practice: Study of Types and Varieties of Small Grains.	B. A. Madson

Wednesday, October 2:

7:40- 8:25	Lecture: Formation and Classification of Soils.	C. F. Shaw
8:35-11:10	Practice: Soils.	
11:20-12:05	Lecture: The Agricultural Library.	Miss A. E. Brown
1-2	Lecture: Small Grains and Their Adaptation.	B. A. Madson
2-4	Practice: Scoring and Judging of Small Grains.	B. A. Madson
7:30	Public Lecture: Agriculture in Pajaro and Santa Clara Valleys and the North Coast Counties.	W. T. Clarke

Thursday, October 3:

7:40- 8:25	Lecture: Physical Properties of Soils.	C. F. Shaw
8:35-11:10	Practice: Soils.	Alfred Smith
11:20-12:05	Lecture: Establishing the Business of Farming.	R. L. Adams
1-2	Lecture: Cultural Practices in the Production of Small Grains.	B. A. Madson
2-4	Practice: Study of Types and Varieties of Corn and Grain Sorghums.	B. A. Madson

Friday, October 4:

7:40- 8:25	Lecture: Soil Moisture, Amounts, Movements.	C. F. Shaw
8:35-11:10	Practice: Soils.	Alfred Smith
11:10-12:05	Lecture: The Agricultural Library.	Miss A. E. Brown
1-2	Lecture: Corn and Sorghums and Their Adaptation.	B. A. Madson
2-4	Practice: Scoring and Judging of Corn and Grain Sorghums.	B. A. Madson
7:30	Public Lecture: Rural Civic Improvements.	J. W. Gregg

Saturday, October 5:

7:40- 8:25	Lecture: Soils, Alkali, Drainage, Irrigation.	C. F. Shaw
8:35-11:10	Practice: Soils.	Alfred Smith
11:10-12:05	Lecture: Selection of Land for Irrigation Farming.	S. H. Beckett

Second Week

Monday, October 7:

7:40- 8:25	Lecture: Culture of Corn and Sorghums.	B. A. Madson
8:35-11:10	Practice: Judging Small Grains, Corn and Grain Sorghums	B. A. Madson
11:20-12:05	Lecture: Farm Drainage.	W. W. Weir

This is a sample page of the daily programme of the Short Courses. If interested, send for the circular giving the complete programme. (See page 15.)



UNIVERSITY OF CALIFORNIA BULLETIN

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These Bulletins include:

The Circular of Information, Academic Departments.

The Annual Announcement of the Summer Session.

The Annual Announcements of the Medical School, the Colleges of
Dentistry, Law and Pharmacy.

The President's Annual Report.

The Prospectus of the College of Agriculture.